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ABSTRACT

The intent of this study was to investigate cognitive performance among Head Start children and to draw implications from such performance to increase understanding of the educational needs of Head Start children from families headed by unwed-mothers. Specific questions addressed whether cognitive performance among Head Start children differed on the basis of (1) three family types (those characterized by unwed-mother, father-absent, and father-present family structures) or (2) mother's age at time of subject's birth. Five measures of cognitive performance were used: mental age, general comprehension, vocabulary and verbal fluency, judgment and reasoning, and knowledge of prepositions. Data were obtained from 117 children attending one Head Start program in northwest Ohio. Multivariate analysis of variance revealed no significant difference in cognitive performance due to family structures or sex of children. Children from families characterized as unwed-mother tended to have lower scores on four measures than did children from the other two family types. Scores on all measures were accelerated with increases in chronological age. (Results are discussed in terms of congruence with other research, and the need for longitudinal data is emphasized.) (Author/RH)

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COGNITIVE PERFORMANCE AMONG HEAD START CHILDREN FROM THREE FAMILY TYPES

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COGNITIVE PERFORMANCE AMONG HEAD START CHILDREN FROM THREE FAMILY TYPES

Abstract

To determine whether cognitive performance among Head Start children differed on the basis of family data (three family types: unwed mother families, father absent families due to separation, paternal desertion, divorce or paternal death and father present families; mothers' ages at birth of the children, number of years of mothers' education) and child data (sex and chronological age) measures from 117 children were obtained. Of that number of children 72 were black, 41 were white and 4 had Spanish surnames. Five measures of cognitive performance were utilized: mental age, general comprehension, vocabulary and verbal fluency, judgment and reasoning, and preposition knowledge. Multivariate Analysis of Variance revealed no significant difference in cognitive performance on the basis of family structure or sex of the children. Data revealed that children from unwed mother families demonstrated a trend toward lower scores on four measures than did children from the other two family types. Scores on all measures were accelerated with increases in chronological age. Results are discussed in terms of congruence with other research. Need for longitudinal data is emphasized.

Introduction

There is presently a considerable accumulation of data regarding the impact of absence of fathers in homes on children's cognitive performance. For example, Radin's (1976) literature review presented evidence that father absence affects the child's cognitive performance negatively and effects of such performance on the child are cumulative.

Supporting the finding of detrimental effects is evidence from Blanchard and Biller (1971) who examined Stanford Achievement Test scores and teachers' grades of third grade boys who had experienced four types of paternal involvement: (absence prior to age 5 years of the children, $\bar{X}$ age of father absence onset = 9 months; absence after age 5 years, $\bar{X}$ age of father absence onset = 5 years, 6 months), father-son involvement of less than 6 hours weekly and father-son involvement exceeding 2 hours daily). Children whose father absence occurred prior to age 5 years were found to be generally underachievers and to consistently experience lower academic performance in third grade than children in the other groups who were studied.

Landy, Rosenberg and Sutton-Smith (1969) studied effects of father night shift employment on quantitative performance of 100 females on the American College Entrance Examination (ACEE) and reported negative effects of such absence. Female students whose fathers were absent in excess of two years due to night shift employment when the girls were 9 years old, generally scored lower on the ACEE than did those whose fathers worked on day shifts. That study seems to suggest that there may exist a critical time period during a twenty-four hour day for father availability which may represent a significant factor for

optimal child learning and perhaps one of those periods occurs during the typical hours for night shift employment.

Santrock (1972) employed retrospective data from Junior and Senior high school low socio-economic class pupils and studied effects of father absence on the basis of pupils' ages at onset of their fathers' absence (between 0-2 years, 3-5 years, 6-9 years, 10-11 years, 13-15 years), types of paternal separation (whether such was due to death, desertion or separation) and whether a stepfather resided in the homes. Otis Quick Scoring IQ test scores and Stanford Achievement Test scores at third and sixth grades were compared. Significant group differences were found along several dimensions. Achievement test scores from boys and girls from father absent homes were lower than corresponding scores from pupils in homes where their fathers were present. Regarding age of the child at onset of father absence, effects of father absence were found to be most debilitating when fathers left home during the early years (0-2 years) of the children's lives. In addition, father absence due to divorce, paternal desertion or family separation occurring prior to child ages of 5 years was more damaging than when absence for the same reasons occurred during child ages between 6 and 11 years. On the basis of these studies child rearing in nuclear families is more favorable toward child academic performance than so in nonintact families. Thus, home environments have been found to serve academic needs of children best when two parents are available simultaneously to provide care and nurturance for their children.

Kohn and Rosman (1973) studied several cognitive measures obtained from 287 boys between ages 58 and 78 months who were attending New York

City public school kindergarten classes and day care centers. Measures included, among others, intellectual ability and expressive language. There was approximately even distribution between black and white children across three social classes (Hollingshead, 1957 classes V, IV and III from low to high). Results from that study revealed that family intactness was less relevant for children's cognitive functioning than were other measures reported in the study. Those results appear to suggest that although father absence was less negatively impacted on children's cognitive performance than were other measures, nevertheless detrimental effects of father absence on children's cognitive functioning at least to some extent are implied from the results.

Each of the studies reviewed here related to families in which fathers had been present in the homes during some time segment of the children's lives, but had departed either temporarily for employment purposes or perhaps permanently due to other reasons. One may reasonably assume that mothers in those father absent families may not have been confronted with tasks of providing total economic support and major care-giving functions for the complete family unit during periods when the fathers were present. That assumption is based on the thought that role assignments may have been shared between fathers and mothers during father presence.

Role sharing indeed becomes nonexistent in the increasingly large numbers of single parent families. One parent is often confronted with multifaceted responsibilities including economic support, problem solving functions associated with child care and other major decision-making tasks. Changes in family organization have occurred with rapid

pace during the previous decade and have resulted in increasing numbers of female headed households. Children who are born and reared in father absent families due to unwed mother status encounter many disadvantages. For example, Norton and Glick (1976) pointed out that in addition to psychological consequences associated with absence of one parent, children who live in families headed by women are likely to have mothers in the labor force and to reside in poverty environments.

Several personality characteristics of unwed mothers have been reported. Parker and Kleiner (1966) compared the prevalence of psychoneurotic symptoms among Negro mothers who were heads of households (no husbands or surrogate husbands present in the home) with the same symptoms among Negro mothers in households with such a male person present (intact families). Mothers from intact families were found to demonstrate significantly fewer of such symptoms than did mothers in father absent families. Other writers (Jones, Meyer and Borgotta, 1962) reported immaturity, low intelligence and low ego strengh among unwed mothers. These studies have clearly documented evidence that children in father absent homes are reared by mothers who manifest more psychiatric difficulties than are children reared in father present homes.

Some unwed mothers cope with their child bearing out of wedlock by releasing their children to agencies for adoption. Fetsinger (1977) found that such mothers who fail to surrender their babies for adoption are likely to have been reared in broken homes. Thus, some unwed mothers tend to follow the childrearing model which was demonstrated by their parents. There appears to exist a psychological factor

contributing to decision making with unwed mothers in determining whether they will rear their children without presence of a spouse.

Notwithstanding disadvantages associated with unwed mother status, favorable maternal attitudes concerning children's education have been revealed. Kreisberg (1967) reported that husbandless mothers are particularly concerned about educational attainment of their children. In order that their children demonstrate success with educational endeavors, husbandless mothers were more likely than mothers with husbands to impose high demands on their children for academic excellence.

In view of the herein described maternal personality characteristics, information about preschool children born to and reared by unwed mothers is informative to persons whose concerns focus on educational outcomes of young children, particularly those attending Head Start programs. Little information is available regarding cognitive performance among Head Start children from homes of mothers who bear children out of wedlock. Knowledge of levels of cognitive performance of such children will help determine if special needs exist among such children. If so, planning may be performed assuring them of continued academic success. Previous research on father absent children has dealt with cognitive performance among only those who had experienced some residential contact with fathers.

Considering this limitation in knowledge the intent of this study was to investigate cognitive performance among Head Start children and draw implications of such performance for increased understanding of educational needs of Head Start children from unwed mother families. Speficically, one purpose of this study addressed the question of

whether cognitive performance among Head Start children differed on the basis of three family types from which the children emerged: (1) unwed mother families defined in this study as families where mothers gave birth to children but had not been married (2) father absent families (due to separation, paternal desertion, divorce or paternal death) and (3) father present families.

Another area of interest in this study pertained to the mothers' ages at birth of their Head Start children. Recent research (Lobl, Welcher and Mellits, 1971) reported correlates of mothers' ages at birth of their infants and later child intellectual performance. On the basis of that study two groups of infants were at a disadvantage (when they reached ages 4 and 5 years) for intellectual development. The infants were those born to mothers less than 15 years old and those first born to mothers at age 35 years and older. That finding was one source of interest in the present study. Accordingly, another prupose of this study was to determine whether cognitive performance of Head Start children differed on the basis of ages of their mothers at the time of birth of the Head Start children.

Procedure

Subjects

This study was an investigation of all children attending one Head Start program. One hundred, twenty-five children a Head Start program in Northwest Ohio were assessed. Incomplete data existed for eight children due to their absence and consequently results from 117 children (72 black, 41 white, 4 with Spanish surnames) were included in data analysis. There were 64 boys and 53 girls whose ages ranged from 43 to 68 months. Of that number 30 were born to unwed mothers (18 boys, 12 girls), 29 were from father absent homes

due to separation, paternal desertion, divorce or paternal death (18 boys, 11 girls) and 58 were from father present families (28 boys, 30 girls). See Table 1. Inspection of

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Insert Table 1 about here

Table 1 reveals that the number of children in this study was almost equally divided between those from father present and father absent families.

Demographic Data

Average ages of the mothers at birth of the children in this study were: (a) of unwed mothers, $\bar{X}$ = 18.20 years, S.D. = 5.75, range from 14 to 38 years; (b) of mothers from father absent families (due to separation, paternal desertion, divorce or paternal death), $\bar{X}$ = 20.21 years, S.D. = 5.14, range from 13 to 35 years and (c) mothers from father present families, $\bar{X}$ = 21.91, S.D. = 6.40, range from 14 to 41 years. Maternal age range at birth of the children for the total study population was from 13 to 41 years.

Educational levels of the mothers were measured with the Hollingshead Two-Factor Index of Social Position (Hollingshead, 1957), where a score of 1 represents graduate professional graining and a score of 7 (at the opposite end of the continuum) represents less than 7 years of schooling. Educational levels in this study were: (a) for unwed mothers, $\bar{X}$ = 4.60, S.D. = .72, (b) for mothers from father absent families (due to separation, paternal desertion, divorce or paternal death), $\bar{X}$ = 4.79, S.D. = 1.15 and (c) for mothers from father present

families, $\bar{X}$ = 4.81, S.D. = .96. These average educational levels represent an equivalent of 12-13 years of maternal education.

Family Social Class Positions were also measured with the Hollingshead Two-Factor Index of Social Position, where education and occupations of heads of households are factors. Scoring the occupational factor is computed, as is the educational factor, on a continuum from 1 (indicating executive positions) to 7 (indicating unskilled employment or welfare recipients). The two factors receive weighted values of 7 and 4 respectively and a product is obtained from each on the basis of factor score and weight. Products of the two factors are summed to represent an Index of Social Position which may range from 11 (representing the highest position) to 77 (representing the lowest position). The range of scores which correspond to Hollingshead's categories are: Category I, 11-17; Category II, 18-27; Category III, 28-43; Category IV, 44-60; Category V, 61-77. Thus, social class position of a university graduate who is employed as an executive, an infrequent occurrence in this study, would be computed as follows: (1 x 7) + (1 x 4) = 11.

The average social class positions for families in this study were: for unwed mother families, $\bar{X}$ = 65.70, S.D. = 5.25; for father absent families (due to separation, paternal desertion, divorce or paternal death), $\bar{X}$ = 65.76, S.D. = 3.23; and for father present families, $\bar{X}$ = 63.41, S.D. = 8.91. The average social class position of families in this study was within Hollinghead's Category V and is labeled "low social class position."

Measures of Cognitive Performance

Measures from five sources were obtained from each child. One measure yielded mental age (expressed in months), three groups of tasks measured specific cognitive aspects and one measured receptive language.

The Stanford-Binet Intelligence Scale, Form L-M (Terman and Merrill, 1960), scored with 1972 norms, was utilized to measure mental age. Three groups of tasks derived from an analysis of The Stanford-Binet Scale (Valett, 1963) were: (1) general comprehension, "Ability to conceptualize and integrate components into a meaningful total relationship," (Valett, 1963, p. 50), (2) vocabulary and verbal fluency, "Ability to correctly use words in association with concrete or abstract material..." (Valett, 1963, p. 50), and (3) judgment and reasoning, "Ability to comprehend and to reason appropriately to specific situations requiring discriminations, comparisons and judgment in adaptation," (Valett, 1963, p. 50). A measure of receptive language was derived from the research form of the Preschool Preposition Test, PPT (Aaronson and Schaefer, 1967). The PPT is a non-verbal receptive language measure containing 23 prepositions and is appropriate for children between three and four years old, or five years old in disadvantaged populations. Measures of cognition and receptive language were expressed in raw scores.

In summary, the dependent variables were: mental age assessed with the Stanford-Binet Intelligence Scale, tasks measuring general comprehension, vocabulary and verbal fluency, judgment and reasoning and preposition knowledge (PPT scores). Independent variables were: family data consisting of (a) number of years of mothers' education,

(b) mother's age at birth of the child and (c) three family types (1) unwed mother families, (2) father absent families (due to separation, paternal desertion, divorce or paternal death) and (3) father present families. Child data on independent variables consisted of sex and chronological age.

Assessment

Each child was tested individually in a small room away from classrooms, thus avoiding distractions attendant with class activities. All assessments were completed and scored prior to viewing family data. Thus, no knowledge was available regarding family variables during the assessment period.

Results

Analysis of Data

Five dependent variables were submitted to a Multivariate Analysis of Variance with the following items as factors: number of years of mothers' education, the mothers' ages at birth of the children and three family types: (1) unwed mother families, (2) father absent families (due to separation, paternal desertion, divorce or paternal death) and (3) father present families. In addition, child data representing independent variables comprised sex and chronological ages.

The multivariate F values for independent variables are given in Table 2. Means and standard deviations for dependent variables are given in Table 3. Inspection of table 2 reveals that the number of

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Insert Table 2 about here

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years of mothers' education completed and mothers' ages at birth of the children in this study were not significant for cognitive performance among this group of preschool children. Neither was sex of the children nor types of family structures from which the children came significant factors for cognitive performance. It is noteworthy, however, that a review of Table 3, depicting means and standard deviations for five cognitive measures, reveals a trend for children from unwed mother families to score below children from the other family types on four of the five measures: mental age, general comprehension, judgment and reasoning and preposition knowledge (PPT). Yet children from unwed mother families scored higher than children from father absent families (due to separation, paternal desertion, divorce or paternal death) on the vocabulary and verbal fluency measure, but again lower than children from intact families. Scores failed to reach significance in each instance. Significant effects were revealed with respect to

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Insert Table 3 about here

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chronological ages of the children for all five measures of cognitive performance ($p < .0001$), Table 4). The interpretation here is that as

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Insert Table 4 about here

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the children increased in chronological ages their scores with mental age, general comprehension, vocabulary and verbal fluency, judgment and reasoning and with preposition knowledge were also accelerated.

For example, with the PPT the youngest child aged 43 months earned a raw score of 11 and the oldest, aged 68 months, earned a raw score of 19 (Figure 1).

Insert Figure 1 about here

Discussion of Results

Results from this study revealed no differences in cognitive performance among Head Start children on the basis of family type. This finding is congruent with that of Kohn and Rosman (1973) which reported family intactness to be less relevant for cognitive performance than were other variables observed with kindergarten and preschool boys in New York City. The results in this study represent an encouraging outcome, especially in considering that the number of single parent families has increased almost ten times as rapidly as two-parent families during the past decade (Ross and Sawhill, 1975). Although there was lack of difference in cognitive performance on the basis of family type, nevertheless one cannot ignore two trends found in the present study. The first was that scores of children from unwed mother families were lower on four cognitive measures (mental age, general comprehension, judgment and reasoning and preposition knowledge) than were corresponding scores of children from the other family types. The second revealed a different outcome. Scores from unwed mother families were higher than were scores from father absent families (due to separation, paternal desertion, divorce or paternal death) on the vocabulary and verbal fluency measure (Table 3). While score

differences failed to reach significance, these findings certainly reveal that uncertainty exists regarding future educational prognosis of children from unwed mother families. Longitudinal studies are strongly needed to determine whether mothers' marital status does impact upon children's academic outcomes and if so, at what ages do such influences become manifest. Availability of such information could be helpful in curriculum construction and in development of parent education materials.

The finding of no differences in cognitive performance failed to support the finding in the literature (Blanchard and Biller, 1971; Landy, et al., 1969; Santrock, 1972) that children from father absent families performed at lower levels on cognitive measures than did children from intact homes. In the present study there was only a trend in that direction. At the time the above three studies were performed the participants were all within ages of formal school or college attendance. In addition, no records of cognitive performance were reported for participants during their preschool years. Therefore, it appears reasonable to submit the notion that differences on cognitive measures (had assessments been made) may not have been revealed for those participants during their preschool years as was found in the present study. Differences reported in those studies were found during time periods in the participants' lives when many other social influences could have combined with family intactness and impacted on the pupils' cognitive functioning. The literature supports the finding that scores on cognitive measures may fail to reveal group differences at one age in children's lives, but may become known during

later time periods with the same groups of children (Golden, Birns, Bridges and Moss, 1971).

The findings that cognitive performance among this group of children was unrelated to their mothers' education and ages could be explained on the basis that the mothers' average educational level was completion of 12-13 years of schooling and average maternal ages at birth of the children was 20.16 years. As a group, the mothers' ages in this study exceeded that which was found to be at a disadvantage for later child development (Lobl, et al., 1971).

A positive revelation was the finding that children's scores increased as chronological ages increased. That finding was in the expected direction that as children grow older their knowledge bases become simultaneously expanded.

Conclusion

The results from this study draw attention to the need for continued research on cognitive performance with Head Start children, particularly with those from unwed mother families. Information about such children is thought to be helpful in understanding the influences which unwed mother family environments may induce on the child's cognitive functioning. Also, additional research among groups of preschool children of similar ages as those in the present study and from non-Head Start samples might be helpful in isolating and defining characteristics unique to children from unwed mother families. This type of information could result in implications for planning educational strategies for working with young children and their families.

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TABLE 1

White and nonwhite boys and girls from three family types

Sex	Family types					
	Unwed mother families (N = 30)		Father absent families (due to separation, paternal desertion, divorce or paternal death) (N = 29)		Father present families (N = 58)	
	White	Nonwhite	White	Nonwhite	White	Nonwhite
Boys	18	0	10	8	13	15
Girls	0	12	1	10	13	17
Totals	18	12	11	18	26	32

TABLE 2

Multivariate F-values for independent variables

Source	df	Multivariate F	Tail probability
Number of years of mothers' education	9,98	0.83	.5944
Mothers' age at birth of children	9,98	0.73	.6795
Sex	9,98	0.72	.6781
Family type	18,194	0.80	.6942
Chronological age	9,98	49.26	.0001

TABLE 3

Mean scores and standard deviations for five measures of cognitive performance among Head Start children from three family types

Measures of cognitive performance	Family types		
	Unwed mother families (N = 30)	Father absent families (due to separation, paternal desertion, divorce or paternal death) (N = 29)	Father present families (N = 58)
Mental Age	48.90(4.69)[a]	51.17(6.21)	51.79(6.90)
General comprehension	6.90(1.60)	7.07(1.65)	7.36(1.87)
Vocabulary and verbal fluency	7.27(0.87)	7.03(0.82)	7.50(3.01)
Judgment and reasoning	7.90(2.58)	8.10(2.90)	8.93(2.98)
PPT-2	13.43(3.82)	15.10(3.76)	15.22(3.95)

[a]Numbers in parentheses are standard deviation scores.

TABLE 4

F-values for chronological age

Dependent variables	df	F	Tail probability
Stanford-Binet mental age	1	42.08	.0001
General comprehension	1	28.30	.0001
Vocabulary and verbal fluency	1	16.07	.0001
Judgment and reasoning	1	41.13	.0001
PPT-2	1	17.66	.0001

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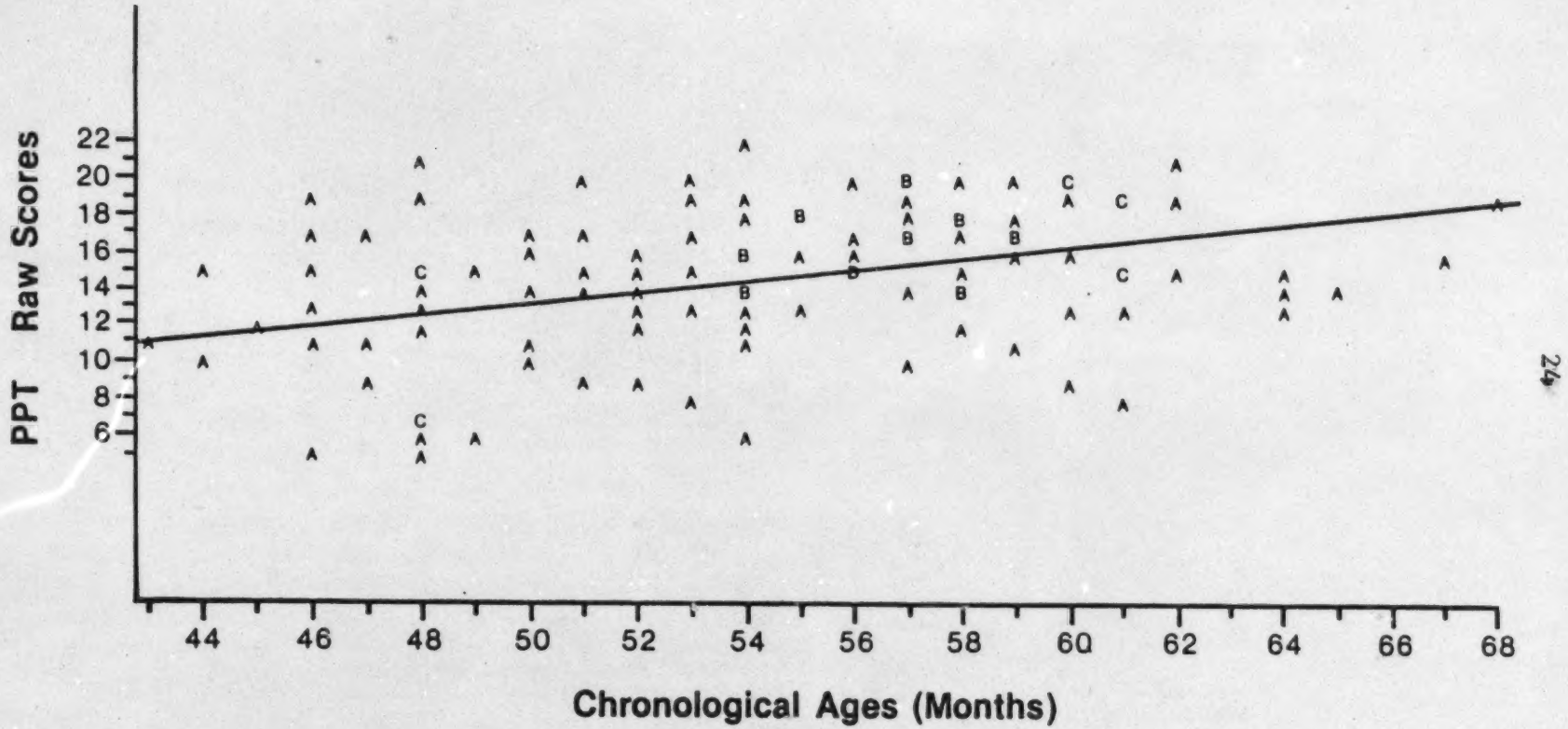

Fig. 1. Regression plot for the PPT task, computed with the formula .8120 + .256 (chronological age). Alphabet symbols indicate the number of values represented by a data point (A = 1, B = 2, C = 3 etc.).